

Fast Ethernet and ATM

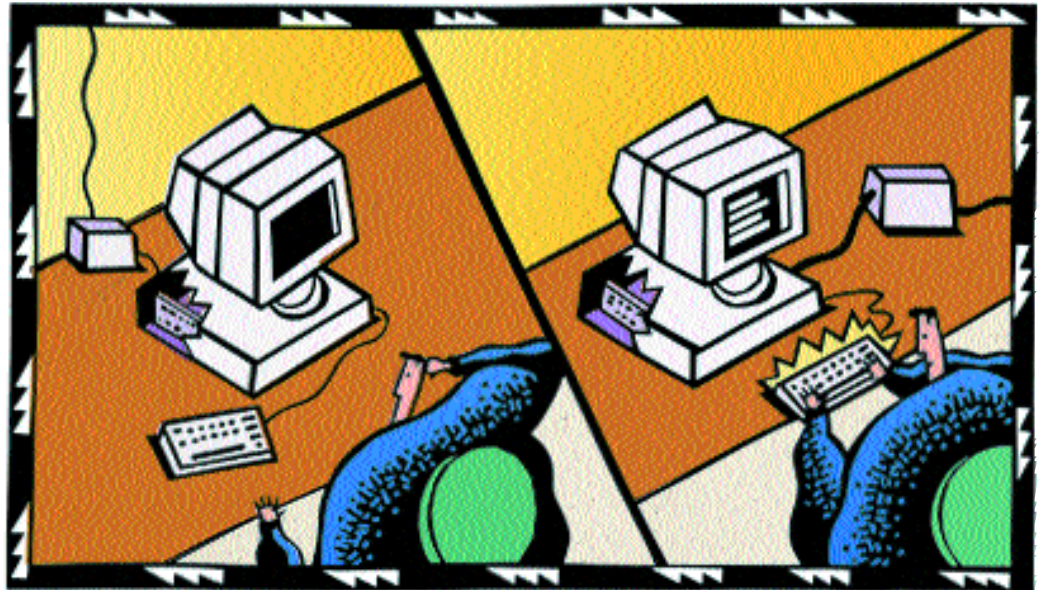
Technologies such as Fast Ethernet and Asynchronous Transfer Mode (ATM) provide the added bandwidth necessary to keep pace with the needs of advanced applications in networked computer environments. Ethernet and Token Ring local area network (LAN) technologies were designed in the early '80s, but with today's Pentium® microprocessor technology and the high-speed PCI bus, new networking technologies are needed to prevent information bottlenecks.

TECHNOLOGY PROVIDERS:

- Original Equipment Manufacturers
- Independent Hardware Vendors

USER BENEFITS:

- Increased bandwidth for network applications
- Increased user productivity
- Better response time
- Increased network reliability



As computer networks continue to grow in scope and complexity, network bandwidth (network's capacity for transferring information) has become a premium. The increasing number of network users, combined with the continuing emergence of advanced, media-rich applications, is compelling many organizations to seek ways to cost-effectively increase their network bandwidth while preserving their existing investments in hardware, software applications and network management tools.

Fast Ethernet technology has emerged as the leader to provide bandwidth-hungry networks with added performance (offering roughly 10 times more throughput) and capacity in the near term. Fast Ethernet is a network technology that provides transmission speeds up to 100 Megabits per second (Mbps) for either shared or

switched networks, and is compatible to the existing 10 Mbps Ethernet. Fast Ethernet provides a cost-effective migration path from 10BaseT Ethernet, a path that also anticipates the emergence of high speed ATM network switching technology.

ATM: In the Future

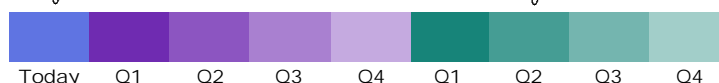
ATM is an advanced, fixed-length cell transmission switching technology that represents the future of networking. ATM is highly scalable, offering transmission speeds of 155 Mbps, 620 Mbps and beyond. ATM is also the only technology that promises to handle voice, video and data seamlessly. While the relatively high cost of the technology and still evolving standards have prevented widespread adoption of ATM to date, we will start to see ATM in the network backbone in the next few years.

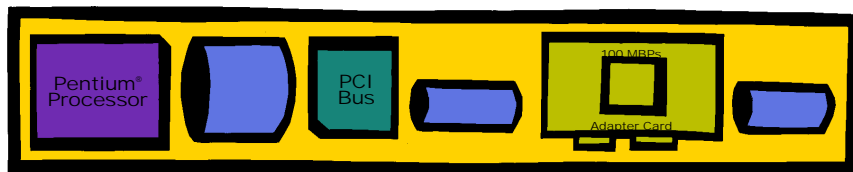
AVAILABILITY TIMELINE

Fast Ethernet



ATM





PCI systems provide enough bandwidth for 100 BaseT adapter cards.

How Fast Ethernet and ATM Work

100BaseT Fast Ethernet leverages technology that has been working reliably for more than a decade. It retains the familiar CSMA/CD (Carrier Sense Multiple Access/Collision Detection) protocol and enables data to be moved between 10BaseT and 100BaseT nodes on the LAN without protocol translation.

100BaseT, which has most of the same design guidelines as 10BaseT, can be implemented with shared or switched hubs, and supports multiple media.

Specifically, the 100BaseT standard includes three media specifications: 100BaseTX, 100BaseT4 and 100BaseFX. The 100BaseTX specification supports 100 Mbps transmission over two pairs of Category 5 unshielded twisted pair (UTP) wiring, used in most new buildings and LAN segments today, or Category 1 shielded twisted pair (STP) wire. The 100BaseTX signaling scheme is borrowed from the FDDI/CDDI (Fiber Distributed Data Interface/Copper Distributed Data Interface)

standard. 100BaseT4 supports 100 Mbps over four pairs of Category 3, 4 or 5 UTP wiring, using a signaling scheme where three wires are used for transmission and the fourth wire is used for collision detection. 100BaseFX defines 100 Mbps operation over two strands of 62.5/125 micron fiber using a signaling scheme similar to 100BaseTX.

Fast Ethernet approaches the bandwidth bottleneck "bottoms-up," with solutions designed for workgroup servers and clients. In contrast, ATM is thought of as "top-down" technology, penetrating the WAN connection and eventually the enterprise and backbone. ATM offers switching of fixed length packets, generally implemented as high-speed WAN connection over SONET-based fiber. Standards for ATM over fiber have been finalized, and several vendors are developing interoperable products.

In the next few years, Fast Ethernet is expected to establish dominance at the desktop while ATM becomes prominent on the WAN and backbone.

TECHNOLOGY IMPLEMENTERS[†]:

- **Operating Systems**
Windows[®] NT, Windows 95, UNIX[®], Netware[®]
- **Original Equipment Manufacturers**
Bay Networks, Cisco Systems, Hewlett-Packard, Intel Corporation, 3Com

[†]Partial list

For more information on high speed networking, please access Intel's home page on the World Wide Web at:

<http://www.intel.com>.

(choose Communications and Networking)